

## REMARKS

### Claim Rejections 35 U.S.C. § 102 (e)

The Examiner has rejected claims 1-5 and 12 under 35 U.S.C. §102 (e) as being unpatentable by Hijzen et al. (US 6,368,921).

Applicant respectfully disagrees with the Examiner. Claim 1 of Applicant's claimed invention claims a structure (7a) comprising a first pair of features (16a) disposed in a substrate and left exposed, said first pair of features (16a) being equidistant from a first centerline (17a); a second pair of features (16b) disposed in said substrate and left embedded below a layer of material (40), said second pair of features (16b) being equidistant from a second centerline (35a); and a third pair of features (46a) disposed in said layer of material (40), said third pair of features (46a) being equidistant from a third centerline (55a), wherein deviation among said first (17a), second (35a), and third (55a) centerlines is a measurement of overlay. See Figure 3 (b).

In the opinion of the Examiner, Hijzen et al. teaches in figure 9 number 51 a first pair of features disposed in a substrate number 10a. Hijzen et al. further teaches in figure 9 number 17 two pairs of features since there are four features all together, the second and third feature wherein the second pair of features is disposed in the substrate (10a) and left embedded below a layer of material (10a). The third pair of features is disposed in the layer of material (10a). Examiner views the substrate and the layer of material as one and the same limiting structure. See lines 19-22 on page 6 and lines 1-3 on page 7 of the Office action dated February 12, 2003.

Applicant wishes to point out to the Examiner that Hijzen et al. does not in fact teach what the Examiner has stated above. Figures 1-9 are a cross-sectional view of transistor cell areas of a semiconductor body at successive stages in the

manufacture of a trench-gate semiconductor device. See Col. 2, lines 33-38. Hijzen et al. clearly states that the figures only show a few cells, but typically the device comprises many hundreds of these parallel cells between the electrodes 23 and 24. See Col. 3, line 67 to Col. 4, lines 1-3. Consequently, it would not be possible to identify a first pair of features, a second pair of features, or a third pair of features, despite the assertion of the Examiner.

In the opinion of the Examiner, the centerline of the first, second, and third features in figure 9 is an imaginary line that divides through the center of the first, second, and third features. However, as discussed above, Hijzen et al. teaches literally hundreds of cells that are electrically in parallel, as opposed to being electrically in series, between the two electrodes 23 and 24. See Figure 8 and Col. 4, lines 1-3. Furthermore, the cells are all the same so Hijzen et al. does not teach any pair of features. As a result, it is also not possible to discern an imaginary line through any pair of features.

The various embodiments of the structure of Applicant's invention include three pairs of features that are different so that any resulting deviation may be used to measure overlay. Thus, the cited reference of Hijzen et al. does not anticipate claims 1-5 and 12 of Applicant's claimed invention since Hijzen et al. does not teach each and every element of Applicant's claimed invention.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 1-5 and 12 under 35 U.S.C. §102 (e).

#### **Claim Rejections 35 U.S.C. § 102 (b)**

The Examiner has rejected claims 1-5 and 12 under 35 U.S.C. §102 (b) as being unpatentable by Morikawa (US 5,308,682).

Applicant respectfully disagrees with the Examiner. Claim 1 of Applicant's claimed invention claims a structure (7a) comprising a first pair of features (16a) disposed in a substrate and left exposed, said first pair of features (16a) being equidistant from a first centerline (17a); a second pair of features (16b) disposed in said substrate and left embedded below a layer of material (40), said second pair of features (16b) being equidistant from a second centerline (35a); and a third pair of features (46a) disposed in said layer of material (40), said third pair of features (46a) being equidistant from a third centerline (55a), wherein deviation among said first (17a), second (35a), and third (55a) centerlines is a measurement of overlay. See Figure 3 (b).

The Examiner refers to the first pair of features as 39a and 39b, the second pair of features as number 37a and 37b, and the third pair of features as 37c and 37d in figure 4c of Morikawa. The Examiner further states that the second pair of features can even be 37a and 37d while the third pair of features can be 37b and 37c. See lines 11-15 on page 8 of the Office Action dated February 12, 2003. However, the features 37a, 37b, 37c, and 37d are **all the same**.

The various embodiments of the structure of Applicant's invention include three pairs of features that are different so that any resulting deviation may be used to measure overlay. Thus, the cited reference of Morikawa does not anticipate claims 1-5 and 12 of Applicant's claimed invention since Morikawa does not teach each and every element of Applicant's claimed invention.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 1-5 and 12 under 35 U.S.C. §102 (b).

#### **Claim Rejections 35 U.S.C. § 103 (a)**

#### **Claims 6-8**

The Examiner has rejected claims 6-8 under 35 U.S.C. §103 (a) as being unpatentable over Hijzen et al. (US 6,368,921) in view of Farrar (US 6,413,827).

Applicant respectfully disagrees with the Examiner. The concept of overlay, as used in various embodiments of Applicant's invention, refers to the relative placement of a subsequent layer with respect to a previous layer. See lines 8-9 on page 3 of the specification. Applicant wishes to point out to the Examiner that Hijzen et al. describes the structure in Figure 9 as being formed with a self-aligned process. See Col. 6, lines 22-23. One of ordinary skill in the art at the time the invention was made would not have used the concept of overlay to refer to a self-aligned process.

Thus, combination of the structure of Hijzen et al. and the device of Farrar will not produce the structure claimed in claims 6-8 of Applicant's invention and Applicant's structure as claimed in claims 6-8 would not have been obvious to one of ordinary skill in the art at the time the invention was made.

Consequently, Applicant submits that the two references cited by the Examiner do not teach, suggest, or render obvious the invention as claimed by Applicant. In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 6-8 under 35 U.S.C. §103 (a).

#### Claims 9-11

The Examiner has rejected claims 9-11 under 35 U.S.C. §103 (a) as being unpatentable over Morikawa (US 5,308,682) in view of Bostrom (US 3,731,085).

Applicant respectfully disagrees with the Examiner. The concept of overlay, as used in various embodiments of Applicant's invention, refers to the relative

placement of a subsequent layer with respect to a previous layer. See lines 8-9 on page 3 of the specification. Applicant wishes to point out to the Examiner that Morikawa teaches vernier scale patterns (see Col. 3, lines 40-41) that serve as an alignment check pattern (see Col. 3, line 14) for multi-level interconnection of at **least three levels** (see Col. 4, line 35-36) (emphases added).

Thus, combination of the structure of Morikawa and the structure of Bostrom will not produce the structure claimed in claims 9-11 of Applicant's invention and Applicant's structure as claimed in claims 9-11 would not have been obvious to one of ordinary skill in the art at the time the invention was made.

Consequently, Applicant submits that the two references cited by the Examiner do not teach, suggest, or render obvious the invention as claimed by Applicant. In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 9-11 under 35 U.S.C. §103 (a).

### **Claims 1-3, 6, and 12**

The Examiner has rejected claims 1-3, 6, and 12 under 35 U.S.C. §103 (a) as being unpatentable over Applicant's admitted prior art (figure 1 and 2 and pg 2-4).

Applicant respectfully disagrees with the Examiner. The Examiner has clearly stated that Applicant's admitted **prior art fails to disclose** a third pair of overlay bars disposed in the layer of material, the third pair of overlay bars being equidistant from a third centerline (emphasis added). The Examiner has not shown why Applicant's structure, as claimed in claims 1-3, 6, and 12, is obvious. The Examiner has merely stated what is being claimed by Applicant as his invention.

In view of the foregoing, Applicant respectfully requests the Examiner to withdraw the rejections to claims 1-3, 6, and 12 under 35 U.S.C. §103 (a).

Conclusion


Applicant believes that all claims pending are now in condition for allowance so such action is earnestly solicited at the earliest possible date.

If there are any additional charges, please charge Deposit Account No. 02-2666. If a telephone interview would in any way expedite the prosecution of this application, the Examiner is invited to contact the undersigned at (408) 720-8300.

Respectfully submitted,

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